**Green’s Functions and Such**

Seems to be the general case that when dealing with single particles, it is more advantageous to consider direct computation of ket or operator time-development via the formulas in the previous files, rather than the stuff introduced below. Only when we start dealing with multiple d.o.f., i.e. multiple particles, or with fields, does it become more convenient to focus on these latter constructs, i.e., propagators and GF’s, though the former methods still ‘work’ of course.

Green’s functions can sometimes be employed to extract information about the system. As usual, examining the time-evolution of a construct will tell us information about eigenstates/energies. There are two constructs of somewhat frequent use in these contexts. The first is the so-called propagator:



and the second pertains to a variety of constructs variously called Green’s functions. One such would be:



where |Ω0> is some state. Again, one would find that the temporal FT of this construct would reveal the energy excitations of the system.